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The Gel Mass in the Semen of the Boar

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IT has been possible in some species to produce pregnancies by the use of epididymal spermatozoa and, therefore, doubts are sometimes raised as to the function of the semen plasma in reproduction. Of all the species, the semen of the boar contains the largest quantity of accessory gland secretions, and therefore is the most suitable for such studies.

There is very little information about the physiological rôle of the gel in the semen of the boar, and artificial insemination workers remove this portion which comprises up to 30 to 40 per cent. of the whole ejaculate. A gel mass is also found in the semen of human beings, stallions, rabbits, guinea-pigs, etc. With the increased use of mechanical contraceptives in human society, women do not receive the seminal fluid (or the gel) which they would normally have received from their husbands. The present investigation was taken to find out the probable function of the gelatinous mass in normal mating.

Review of Literature

The semen of the boar normally consists of two main portions: one, the liquid part and the other, the solid part. In fresh samples, the solid part has a gelatin-like appearance resembling tapioca (Mckenzie *et al.*, 1938). It does not occur in the semen of the bull, buffalo, ram, goat, dog and cat. As the gel portion occurs in the several species of animals and human beings, it would be appropriate to review the literature on the functions of the gel portion in the different species. The functions may be described as follows:—

(a) acting as a copulation plug;

(b) helping in the transport or maturation (capacitation) of the sperms while in the female genital tract;

(c) bearing physiologically active substances.

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Gel as Copulation Plug

In small rodents, the gelatinous portion is seen as a plug after copulation and so it has been termed a copulation plug or *bouchon vaginal*. Stockard & Papanicolau (1919) described it as such in the case of the guinea-pig, and Hartman (1924) in the opossum. They suggested that the function of the copulation plug is to prevent the escape of the spermatozoa from the vagina.

Ball (1934) thought that in the rat it causes mechanical stimulation of the cervix. Steinach (1894) & Walker (1911) found that in rats, if the organs responsible for its formation are removed surgically, fertility is markedly diminished. Armistead (1925) thought that in guinea-pigs there would be sterility if the vaginal plug formation were prevented by surgical means. However, Engle (1926) found that conception is possible in its absence also. It may be stated here that in none of the above observations was a critical examination made to see that the treated males ejaculated and the spermatozoa were deposited in the vagina.

Gel Helps in the Transport of the Sperms

Blandau (1945) found that in rats the plug lowers the tone of the cervix and thus helps in the transport of the sperms. Ball (1934) demonstrated in rats that females in oestrus in which two or more plugs were formed by several matings, are more likely to become pseudo-pregnant than those in which only one plug is formed; and that pseudo-pregnancy occurred only very seldom if copulation did not result in ejaculation. She, however, did not explain the exact mechanism as to how this is brought about.

The time taken by the sperms to reach the upper third of the Fallopian tube is relatively short, 15 minutes in the rat (Blandau & Money, 1944), a few minutes in the rabbit (Lutwak-Mann, 1954), two to four minutes in cows (VanDemark & Hays, 1954). These observations indicate that the spermatozoa are

conveyed not on account of their own motility but probably by uterine movements. How this is brought about is not yet clear. There may be substances present in the semen plasma which bring about such movements just after coitus.

Mukherjee, Johari & Bhattacharya (1951, 1953a) found that the gel portion in the rabbit absorbs a considerable amount of semen and the locked spermatozoa remain motionless. On liquefaction at the body temperature of the female rabbit the spermatozoa become active again.

Chang (1951) *re* the rabbit, Austin (1951) *re* the rat, think that sperm cells undergo a definite change called Capacitation while they are in the female reproductive tract. However, the exact process of sperm maturation and capacitation with the survival of the sperm in the female tract is not fully understood (Mann, 1954). In both these species, the gelatinous portion is present and may have some influence on this process.

Gel Contains Physiologically Active Substances

Artificial insemination workers have been discarding the gel portion while diluting the semen of the boar and the stallion. In the guinea-pig and rabbit it is possible to induce pregnancy by the artificial insemination of epididymal spermatozoa. Such results create a doubt whether the seminal plasma has any essential rôle in reproduction except acting as a vehicle for the spermatozoa. Very little is known about the presence of physiologically active substances in the gel portion. Mukherjee, Johari & Bhattacharya (1953a) showed that in the gel-mass of the rabbit there is no fructose; and that incubation of freshly collected semen samples with or without the gelatinous portion did not affect the rate of utilisation of fructose by the sperms. They have also *inter alia* shown that the gel-mass contains oestrogenic substance as revealed by the vaginal reaction of spayed rats and mice, and retrograde histological changes in the testes of the male rats.

The gel when given intravaginally caused in the experimental rabbits hyperaemia and distension. Microscopically, there was better growth of the submucosal connective tissue, uterine musculature and a significant increase in the diameter of the Graafian follicles in comparison with the control group (Mukherjee, Johari & Bhattacharya, 1953b).

The work on semen-plasma done on human semen cannot be referred to here in detail as the gel portion was not separated in making those studies. However, it has been shown that the semen contains oestrogen (Green-Armytage *et al.*, 1947; Riisfeldt, 1948; McCullagh & Schaffenburg, 1951; Diczfalusy, 1954). The human semen-plasma has a depressor effect on blood vessels and it stimulates uterine muscles suspended in a bath (Euler, 1934 *et seq.*). It remains, according to Barnes (1939) and Asplund (1947), still to be decided whether similar action of seminal plasma occurs in the female in normal coitus. Choline, phosphoryl-choline, glyceryl-phosphoryl-choline has been found in the semen and the secretions of the accessory sex-organs (Huggins & Johnson, 1933; Diament, Kahane & Levy, 1952). The semen is one of the richest sources of choline in the body and it is present in the semen-plasma and not in the spermatozoa. Sekine (1951) found highly active choline esterase in the spermatozoa of the boar. Choline and its derivatives have well defined pharmacological properties and it is probable that the high concentration of these substances in semen produce a pharmacodynamic action either on the spermatozoa or on the female reproductive organs.

Citric acid in semen was first determined by Schersten (1929, 1936). He showed that citric acid is derived from the male accessory sex-organs. Citric acid is formed by the seminal vesicles in the bull, ram and boar, while in others, as in man, it is secreted by the prostate. In rabbits, citric acid is largely limited to the gel portion which is secreted by *Glandula vesicularis*.

In the liquid part of the seminal plasma of the boar, Mann & Leone (1953) have found the concentration of ergothioneine to be from 29 to 256 mg. per 100 ml. of semen. Inositol is present (2.08 to 2.64 per cent.) in boar semen and in the secretion of the seminal vesicles it is 2,414 mg. per 100 ml. of the fluid (Mann, 1954). In human semen Inositol is usually less than 0.1 per cent. (Nixon, 1952).

Experimental animals

Two boars, A and B, one of Yorkshire breed and the other of the Swedish Landrace, maintained at the Department of Obstetrics and Gynaecology, Royal Veterinary College, Stockholm, were used as semen donors for these experiments. The boars were young, aged 9 to 18 months, weighing about 200 to 250 kg. each. They were kept in a hygienic stall with good feeding and management.

Collection of semen

The semen was collected by means of an artificial vagina of the Swedish model by using a dummy. In this particular case, the A.V. for bulls was modified for use in the boar. In no case was more than one collection made per day. The volume of the ejaculates varied from 30 ml. to 165 ml., the weight of the gel from a few grammes in the Swedish Landrace to 65.2 grammes. The semen was greyish-white in colour, mass activity + + to + + + with 60 to 80 per cent. motile sperms. The *p*H, determined by an electric *p*H meter, varied from 7.4 to 8.26. The sperm concentration ranged from 124,000 to 387,000 per mm^3. The semen quality, as assessed by these tests, in every case was good.

Separation of the gel from the semen

The boar semen consists of a liquid portion (approximately 60 to 75 per cent.), and the solid portion consisting of gelatin-like material resembling tapioca (about 30 to 40 per cent.). In freshly ejaculated semen this material appears as platelets 3 to 5 mm. in size which on standing mostly settle to the bottom. They absorb and swell up a good deal in water. The separation of the gel from the liquid portion was achieved by filtering through a thin-meshed cloth, but it was found that the mesh

would become clogged with mucus which is present in abundance in the liquid part. Subsequently, the practice was to filter the boar semen through the Buchner's funnel without using a filter paper. The gel portion was washed twice, with a sufficient quantity of distilled water to remove all traces of the seminal fluid adhering in between the clumps. Filter paper was used to remove extraneous water from the gel and it was then weighed in a balance.

Biological assay of oestrogens

Five ovariectomised Swiss mice were primed by giving one injection of 0.5 μg. of oestrone as oestrone glycotide-tetra-acetate in aqueous solution. After two weeks, 300 mg. of the gel, dissolved in 2 ml. of warm physiological saline, was inoculated subcutaneously, after cooling the solution in the syringe.

The gel is not very soluble in water but becomes more fluid when warmed. As it is a highly viscous substance, it is difficult to inject with a fine needle and so a large-sized one (1.20 to 1.40 mm.) was used. After inoculation, the site was sealed by a small piece of leucoplast.

Injections were carried out for five days and so *approximately* every mouse received a total quantity of 1.5 gramme of the gel. Vaginal smears were taken every day until the mice were autopsied 10 days after the first injection.

The liquid part of semen which consists of whole of the boar semen minus only the gel portion, was precipitated by adding 95 per cent. ethanol in the ratio of 1 : 10 and then it was stored in the deep-freeze cabinet overnight at $-13°$ C. Next day, it was centrifuged at $-8°$ C. and extracted with EtOH.

The precipitate was again washed with ethanol and centrifuged to remove all traces of "free" and "conjugated" oestrogens.

These two ethanol fractions were mixed and evaporated in an atmosphere of nitrogen at reduced pressure to about one-tenth of its volume. Bischoff, Yee, Moran & Katherman (1951), Bischoff, Katherman & Yee (1951) demonstrated that the oestrogens can be recovered from rabbit and bull sera by precipitating proteins with 80 to 95 per cent. ethanol to the extent of 96 to 99 per cent. Ethanol under these conditions would also remove a considerable portion of water-soluble "conjugated" oestrogens, if any, from the semen.

Werthessen, Baker & Borci (1948) emphasised the importance of making all evaporations in an atmosphere of N_2 and under reduced pressure. The water extract thus obtained was used for the biological assay of oestrogens. Five oestrone-primed, ovariectomised mice were selected. Each one of them was inoculated with 1 ml. of water extract subcutaneously for three consecutive days. Vaginal films were prepared every day till they were autopsied, six days after the first injection.

Results

All the five mice, in which the gel was injected, began to show a positive reaction, as shown by the characteristic keratinisation of the vaginal epithelium, 24 hours after the last injection. The smears were strongly positive 48 hours after, and continued to be highly positive for the next five days. It appears that the gel is slowly absorbed and continues to have its effect for a long time.

During the course of the experiment one mouse died, and so a *post-mortem* examination was conducted on the rest of the mice. The site of the injection was slightly yellow in colour. It appears that the gel, when given subcutaneously, acts as a foreign body, and so the animal organism has a slight reaction to it. It would be of interest to note that in another experiment in rats where 2 g. of the gel was implanted under the skin, there was very little reaction in comparison with the rat in which 2 g. of the gel after ethanol extraction was similarly implanted. This is not unexpected as, after all, the normal place where gel is deposited is in the vagina or the uterus.

Of the five mice which received ethanol-extracted material from 30 ml. of boar semen, only two gave a positive vaginal smear. Thus it would appear that the concentration of oestrogens in 30 ml. of boar semen investigated is very low. The site of injection was incised and no local inflammation was found. It appears that the ethanol-extracted material in water, at least in boars, is not toxic when injected into mice.

The semen when injected is highly toxic. Riisfeldt (1948), McCullagh & Schaffenburg (1951) have reported the high toxicity found by them with human semen. It therefore appears that the procedure adopted has better possibilities in the extraction of oestrogens from semen for biological assay.

A series of preliminary experiments *in vitro* were carried out to see how the gel would behave. Small pieces of the gel, weighing approximately 300 mg. were incubated in a water-bath at 37° C. ± 0.02, either alone or with 5 ml. of sperm fluid for 12 hours to see if the gel liquefies and if so, after how many hours. The gel did not go into solution. In the first case, it dried up and in the second, it was macroscopically the same as before.

With a view to seeing the effect of *p*H on the gel, a small piece of the gel was taken and distilled water was added. The *p*H was made acid by adding N-HCL and brought to 0.08 or made alkaline by adding 8 per cent. of sodium bicarbonate or 2N-sodium hydroxide to *p*H 12.8 at room temperature (25° C.). At *p*H 12.8 it dissolved; but by lowering the *p*H it was not possible to bring back the gel as the proteins in the gel were de-natured. The gelatinous portion in the human semen liquefies in 20 minutes and so for the assessment of semen quality. Macleod (1946) and Simmons (1946) recommend semen examination after that period. Mukherjee, Johari & Bhattacharya (1951, 1953) have shown that the gel in the rabbit absorbs spermatozoa which subsequently, on liquefaction of the gel, are released and become more highly active again. The gel in the boar does not appear to behave in that way.

In the sow, the boar normally deposits the semen in the uterus (Birger, 1952). Mckenzie, Miller & Bauguess (1938) have shown by making fractionated collections that the gel portion comes in the second or sperm-containing phase; or mostly in the third or post-sperm phase. Glover & Mann (1954) found the

gel in the post-sperm phase and consider that it comes as a separate fraction.

If the gel has only the mechanical function of a plug after natural service, one would expect it to be ejected after some time. If the major portion does remain in the sow's genital organs, the question arises as to how the gel is absorbed or used by the sow. With a view to ascertaining this, a few sows, in oestrum, were served by the boar as in normal mating and the sows kept under observation. Enquiries were also made from stock-owners in the breeding herds, in the vicinity of Stockholm. It appears that a very small part comes out when the boar dismounts or immediately thereafter, but most of the gel remains inside.

The gel was weighed in a micro-balance to the nearest 0.1 mg. and dried in a desiccator on sodium hydroxide pellets. After it was dry, it was weighed. It was again kept in the desiccator and finally weighed after three days. The observations made are as follows:—

(A)	Weight of the Petri dish ...	21.8510 g.	
	Weight of the Petri dish and the gel	25.6200 g.	
	Weight of the gel	3.7690 g.	(a)
	Weight of the Petri dish and the gel after drying ...	22.2406 g.	
	Weight of the gel after drying	3.3794 g.	(b)
(B)	Weight of the Petri dish ...	27.3280 g.	
	Weight of the Petri dish and the gel	31.7520 g.	
	Weight of the gel	4.4240 g.	(a′)
	Weight of the Petri dish and the gel after drying ...	27.7874 g.	
	Weight of the gel after drying	3.9646 g.	(b′)

Calculation:

Adding a and a′, 8.1930 g. of the gel on drying became 7.3440 grammes (adding b and b′). Therefore, 100 g. of the gel on drying would be 89.6 g.

The gel contains a very high percentage of solids; 89.6 g. of the solid matter is present in 100 g. of the fresh gel. According to Mckenzie *et al.* (1938), the proportion of the liquid portion is 70 per cent. and the gelatinous portion 30 per cent. in boar semen. He also found in one case where the gel was 60 per cent. of the entire ejaculate. The boar of the Yorkshire breed under this experiment gave 42 g., 65 g., and 80 g. in one ejaculate. The amount of the solid matter which the boar has to produce and discharge at each time of service is indeed very high.

Discussion

The gel of the boar gives a positive Allen and Doisy Test when given to spayed mice. The gel portion of the rabbit semen contains oestrogenic substances and the same has also been found in human semen by several workers. In all these experiments whole human semen was used and so it cannot be said whether the effect was due to the substances present in the gel or in the semen. Diczfalusy (1954) finally showed that human semen contains natural oestrogens. From this, it appears that the oestrogenic effect observed by previous workers was due to the presence of oestrogens themselves. Extraction and isolation of the oestrogens in the pure form from the gel would be the sure test of its presence. It is not known how the gel produces the oestrogenic effect—whether the oestrogens are present in the "free" state or whether it is the end product of the substances present in the gel which have this reaction. Some of the androgens, *e.g.* trans-androstenediol and 17-methyl-androstane-17-ol-3-one, cause vaginal cornification in spayed rodents but are active only in relatively excessive dosage (Parkes, 1935).

In the semen of the boar it appears that oestrogenic substances are either absent or, if present, are in a very low concentration. Biggers (1953) thinks that the intravaginal route for oestrogens is much more sensitive than the subcutaneous route. Mukherjee, Johari & Bhattacharya (1953b) gave the gel portion through the natural route (intravaginally) in immature female rabbits and observed a better development of the endometrial glands and a marked growth of the uterine muscles. Green-Armytage *et al.* (1947), and Meyer (1950) think that husband's semen is of physiological value to the wife and have found clinical evidence to that effect. The gelatinous portion is not essential for fertilisation, as artificial insemination workers remove this fraction before using semen with equally good results.

The fact that the gel is deposited in the uterus of the sow and a good part of it remains there and does not come out through the long tortuous cervix raises the question as to the fate of the gel. In this animal it does not go into solution as happens in the rabbit or in human semen. Huggins & Neal (1942) have described how the semen of normal men after ejaculation immediately forms a solid mass. Within a few minutes, softening and liquefaction are observed and in 15 minutes the semen is liquid. The studies *in vitro* reveal that it dissolves in a highly alkaline medium, at *p*H 12.8, which is never found in the uterus of the sow. This leads us to think that the action of the gel is probably enzymic in nature and requires further elucidation.

Gelation in Boar Semen

Semen is ejaculated in a liquid or semi-liquid form. The semen of the boar, horse, rabbit, guinea-pig and human shows the gelation phenomenon; while the semen of the bull, buffalo, goat, sheep, and dog remains liquid throughout.

How the gel is formed. It is thought that in most cases the substrate for the gel formation is a protein substance which is secreted by the seminal vesicles (Bergmann & Leuckart, 1885). Camus & Gley (1896, 1921, 1922) first thought of the enzymic nature of this coagulation. The enzyme present in the coagulating glands of the rodents called "vesiculase" coagulates the secretion of the seminal vesicles (Walker, 1910; Moore & Gallagher, 1930) and forms a gel called "*Bouchon vaginal.*" No work has been done on boar semen. In human beings, too, where

this phenomenon has been studied in detail there is a difference of opinion.

Weisman (1941), Hammen (1944), and more recently Oettle (1954) have propounded that there are two portions in the human semen: one gelatinous and the other a milky fluid. Oettle further thinks that the current enzymic theories of coagulation and subsequent liquefaction by proteolytic enzymes (Lowsley, 1942; Huggins & Neal, 1942; Lundquist, 1949) are all based on the belief that coagulation occurs after ejaculation. In the boar, Mckenzie, Miller & Bauguess (1938) studied the question by extirpating the glands but could not prove it *in vitro* experiments. I think that in the boar, the formation of the gel is of a physical nature. The substances, in the solid or semi-solid condition suspended in the seminal fluid, come out from the urethra and when they absorb water or seminal fluid, depending on the osmotic pressure, regain a size and remain as such in semen. These substances are formed in the seminal vesicles as the gel comes out at the end of the ejaculate in all the species and, as Glover & Mann (1954) state, the ejaculation in the boar agrees with the pattern established in other mammalian species.

Mckenzie *et al.* (1938) thinks that in the boar the seminal vesicles and Cowper's glands and possibly prostate are responsible for gel formation. In rats and guinea-pigs, the seminal vesicle and the ventral part of the prostate are said to form it. In the rabbit, it is formed by *vesicula glandularis (uterus masculinus)* which is the homologue of the vagina (Ritchie).

Once when the Yorkshire boar was serving the dummy sow, it was seen that on dismounting slowly, a substance solidified at the mouth of the A.V., showing lines where the substance had solidified. I, therefore, think that the gel substance is formed inside the body and does not form after semen ejaculation. Oettle (1954) also thinks that human semen coagulates before ejaculation.

Microscopical appearance.—The gel in the boar, under the phase-contrast microscope, gives an appearance of a non-homogenous mass of fibres. Mukherjee, Johari & Bhattacharya (1953) have made photographs of the histological studies on the gel of the rabbit. They found the sperms enclosed and inactive in the thick mass. On incubation, the mass appeared vacuolated and the spermatozoa were released slowly. They state that examination of stained sections of unincubated, colourless mass without spermatozoa showed fairly uniform distribution of stain.

Huggins & Neal (1942), Hammen (1944), and Oettle (1954) observed the coagulated human semen, microscopically, as many laced bundles of long, clearly defined, parallel refractile fibres. The spermatozoa interlocked in it were non-motile and when the sperm serum (gel) undergoes solution, the sperms become highly active again.

It appears that microscopically the bundles seen in the gel of the boar have the same appearance as that observed in human coagulated semen. As the gel in the boar does not liquefy on incubation, the vacuolated appearance as seen in the rabbit or in man is not observed.

Summary

1. The gelatinous part of the semen in the boar, besides acting mechanically in preventing the back flow of semen, has other functions in reproduction.

2. The gel contains substances which give a characteristic response for oestrogens when injected in ovariectomised mice.

3. The gel in the boar behaves quite differently from that in the rabbit and human being.

4. The gel does not go in solution on incubation at 37° C.

5. The physiology of the gelatinous part has been discussed from various aspects.

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CORRESPONDENCE

Nitrofurazone as a Coccidiostatic Drug

Sir,—Dr. Blount (*Vet. Rec.* **67.** 916) offers criticism of the work of Messrs. Davies & Kendall (*Vet. Rec.* **67.** 867) for conducting experiments, the management design of which is far removed from farm practice. In this, I would uphold his criticism. I think he does right in stating that the *p*H of the crop, gizzard and intestinal contents, and the physical state of the intestinal contents may be important in the degree of " take " to be expected.

I would refer to the rôle of roughage and protein as dietary factors influencing coccidiosis in chicks (Mann, T. Barton (1947). *J. Agric. Sci.* **37.** 145). The experiments therein described were performed under conditions of normal farm practice and it was demonstrated that *there was no need to ' suffer coccidiosis at all* if a diet of high starch, low roughage and low protein content was used.

Dr. Blount expresses the opinion that partial protection is all the farmer expects—" something which will *help* him, something which is cheap but useful " —and he asks these workers if the chicks used in their experiment were of normal bodyweight at the time of the experiment.

I am rather intrigued by this naïve request for I have been enquiring for 30 years the normal bodyweights of chicks and poults at any given age. Kempster & Parker (1936. *Res. Bull.* 247. University of Missouri):—

" Normal growth refers to growth, limited by hereditary factors, which birds should attain under average or normal conditions. It is apparent then, that in order to establish a normal growth curve for a single variety or strain, the data used in calculating the same should be distributed throughout the growing season and also over a sufficient number of seasons to eliminate the effect of such factors as management and uncontrollable environmental conditions. Such studies should also include an adequate number of samples."

I should be glad of further information, along these lines, if Dr. Blount can supply. What can be stated is this, that Fransen, Andrews & Carrick (1955. *Poult. Sci.* **34.** 205) show for Barred Plymouth Rock cockerels at 10 weeks, on a 1937 ration, a bodyweight of 918 grammes and on a 1952 ration, 1,318 grammes. The better knowledge of nutrition between 1937 and 1952 shows that what may be normal on one ration is certainly not normal on another.

Mr. Paul Crosfield (1955. *Vet. Rec.* **67.** 915) thinks that the continuance of the profession as a viable entity will depend on its full integration into a State service. Heaven forfend! Surely the continuance of the profession depends on a complete knowledge of diagnosis and remedial treatment which will make farming economic. If the veterinary surgeon thinks only of pathogens and drugs and neglects the nutritional impact both in research and practice, then he has only himself to blame if, in due course, he finds himself a Grade 3 civil servant.

Yours faithfully,

T. BARTON MANN.

" Braust,"
Weyhill,
Nr. Andover,
Hants.

NEWS AND COMMENT

Films at the Leamington Spa Congress

If readers know of any particularly good films which they think would be interesting at Congress, will they please notify Mr. G.V. Laugier, M.R.C.V.S., Ministry of Agriculture, Fisheries & Food, 186, Sandon Road, Stafford? There is to be a film session each day, and Mr. Laugier would be pleased to know the titles of films, the size, the length of the run, from whom they may be obtained and so on.

Press Dinner Party

With a view to meeting informally the leaders of the agricultural press and exchanging ideas of common interest, the President gave a dinner party at the Savoy Hotel on March 6th. For the Association there were the Officers, Dr. W.R. Wooldridge, Chairman of the Parliamentary and Public Relations Committee, Professor D.L. Hughes, Chairman of the Editorial Committee, the General Secretary and the Editor.

The guests from the press were Mr. Anthony Hurd, M.P., agricultural correspondent of The Times, Mr. H.C. Hunt, agricultural liaison officer of the Talks Division, B.B.C., Mr. Messer, editor of the Farmers' Weekly, Sir Richard Haddon, managing editor of the Farmer & Stockbreeder, Mr. W. Stephens, editor of The Field, Mr. T.K. Hodder, editor of Sport and Country, Mr. W.O. Case, editor of Horse and Hound, and Mr. J.K. Adams, deputy editor of Country Life.

At the end of dinner Mr. Wilkinson, having proposed the loyal toast, welcomed his guests in a brief speech. In reply Sir Richard Haddon spoke of the value, to both sides, of an informal meeting such as this, and welcomed on behalf of his colleagues the prospect of closer understanding between the profession and the agricultural press.

Cocktail Party at the House of Commons

To enable the Officers and a number of senior members of the profession to meet members of both Houses of Parliament and discuss informally matters of veterinary interest, four M.P's, Mr. A.J. Champion, Mr. R.F. Crouch, Mr. J.A.L. Duncan and Mr. T.F.Peart kindly gave a cocktail party at the House of Commons on March 6th.

As the senior Member among the four hosts, Mr. Duncan welcomed the guests and asked the President briefly to address them. Mr. Wilkinson referred to the profession's concern about such matters as lack of veterinary representation on official committees and working parties, the refusal, so far, to create a veterinary research council, meat inspection, the veterinary supervision of A.I. centres, and the overlapping of charitable facilities provided by certain animal welfare societies. In this connection the President suggested

that it would be in the public interest to establish a committee of inquiry into the finances and functions of the societies. Such a committee might well recommend a confederation of the societies to prevent the present gross overlapping.

When the President had spoken the parliamentarians talked informally with the members of the profession, and helpful contacts were made as views were exchanged. The Association is greatly indebted to the four gentlemen who, as hosts, provided this most pleasant and useful party.

Holiday Exchange

Easter.- The 21-year-old daughter of a French veterinary surgeon would like to spend the Easter holidays "au pair" or as a paying guest in or near London. Any reader who may be good enough to help is asked to write to the General Secretary of the B.V.A.

Summer.- As last year, we have been receiving many requests from France for the names of veterinary surgeons who would be willing to receive in their homes, during part of the summer, the children of French veterinary surgeons. In return, French families would welcome any British children. Lack of space prevents details being given here, but readers who are interested in this possibility are invited to notify the General Secretary.

R.C.V.S. Annual Dinner

The annual dinner of the Royal College will be held on the 12th April at the Hyde Park Hotel. Tickets, at two guineas each, are now available from the Registrar and applications for them are invited.

R.C.V.S. Obituary

We record with regret the death of the following member of the profession:-

O'Connell, Maurice Geoffrey, 12 Robinson Row, Salcombe, Devon. Graduated London, 9th July, 1914. (Capt. late R.A.V.C.(SR).) Died 17th February, 1956.

Personal

Births

MATHER.- On March 8th, 1956, to June, wife of D.B. Mather, B.Sc., M.R.C.V.S., of Oravia, St. Austell, a daughter, Elizabeth Ann.

MOWAT.- On March 7th, 1956, at the Mount Alvernia Nursing Home, Guildford, to Joan, wife of G. Noël Mowat, M.R.C.V.S., Cranleigh, Surrey, a son.

HUDDERSFIELD CORPORATION BILL

Amongst the private bills presented to Parliament in the present Session that of Huddersfield Corporation provided, in Clause 47, that "No person shall for gain provide accommodation for pet animals belonging to any other person on any premises in the borough unless he and those premises are registered by the Corporation". In addition the Corporation would have powers to inspect registered premises and to make byelaws regarding "accommodation suitable as respects size temperature lighting ventilation and cleanliness" and "to prevent the spread amongst pet animals of infectious diseases".

The Council of the Royal College of Veterinary Surgeons was advised by their Registrar and their Parliamentary Agent that this Clause, either deliberately or consequentially, would include the premises of Veterinary Surgeons and make them liable not only to inspection by but also to direction by unqualified persons in matters bordering on diagnosis, treatment and general professional discretion. Whilst this initially only affected the veterinary profession in Huddersfield, there was a grave danger that if the Clause became law it would become a precedent to be followed successfully by other municipal authorities.

The Bill originated in the House of Lords, and it was essential to deal with it there before it passed to the House of Commons. As the Corporation refused the College request for exemption of Veterinary Surgeons and Practitioners, the College Council took the only available course and formally petitioned against the Bill in the House of Lords.

The Bill was considered by a Committee composed of Lords Hampton (Chairman), Broughshane, Foley, Cawley and Moyne on Thursday and Friday, 8th and 9th March. Mr. Harold Willis, Q.C. and Mr. Eric Blain appeared for the Corporation and Mr. Harold Marnham appeared for the College.

The case for the Corporation was based on evidence of unsatisfactory conditions in some pet animal boarding establishments owned by unqualified persons. It was claimed that veterinary premises should equally be subject to regulation, as municipal authorities had similar powers, under the Public Health Acts, over nursing homes owned by Medical Practitioners.

The case for the Royal College was based on the status and duties of the veterinary profession, the liability of a professional man to answer to the Disciplinary Committee for wrongful conduct, and the fact that Parliament had already in the Pet Animals Act, 1951, laid down that Veterinary Surgeons and Practitioners were potential inspectors under that Act and that therefore it was a retrograde step to make them subject to inspection themselves by unqualified persons as under the proposed Clause.

After the Registrar for the College had given evidence in chief and early during his cross examination by Mr. Willis, the Committee indicated that it did not desire to hear any more and was satisfied not only that Veterinary Surgeons and Practitioners' premises should be exempted from the effect of the Clause but further that the Committee felt that Veterinary Surgeons and Practitioners were the only persons who could inspect premises satisfactorily from the disease aspect.

It was thus unnecessary to call Mr. W. R. McKinna, M.R.C.V.S., of Huddersfield, who was the next College witness.

Accordingly, on Monday, 12th March, amendments agreed by the Corporation and

the College were inserted, by leave of the Committee, in the Bill which will now go in its new form to the House of Commons.

These amendments provide firstly for the exemption of the premises of Veterinary Surgeons and Practitioners from the requirements of registration, inspection etc., and secondly a provision similar to Clause 4 (1) of the Pet Animals Act, 1951, empowering the Corporation to appoint, in addition to its own officers, Veterinary Surgeons and Practitioners as Inspectors.

CORRESPONDENCE

Sir, - The Huddersfield Corporation Bill has this week been examined by a Select Committee of the House of Lords, and one of its clauses sought to give power to the Corporation of registration of boarding accommodation for pet animals and their inspection by officers of the Local Authority, e.g. Sanitary Inspectors.

I feel that the profession should know that we owe a debt of gratitude to the Registrar of the Royal College of Veterinary Surgeons, Mr. W.G.R. Oates, and to the College Parliamentary Agents, who saw that the term "accommodation for pet animals" included those of veterinary surgeons even if only used for hospitalisation. That this was the correct interpretation was shown by the refusal of the Corporation to accede to the request of the Royal College to exempt veterinary premises from this clause of their Bill. Consequently, the Royal College had to petition against the Bill when it came up for scrutiny in the House of Lords and had to engage Counsel to present our case. I know that our Registrar put in a tremendous amount of work and research in preparing the petition, and I was happy to be able to render a little assistance in that direction. Without hearing all the evidence to be presented by the Royal College, the Select Committee interrupted the hearing, saying that they thought veterinary surgeons should not come into it at all, and, indeed that inspection could best be carried out by veterinary surgeons. Had the clause been approved as desired by its promoters, then a dangerous precedent would have been set and encouragement given to other local authorities to insert similar clauses when they presented private bills to Parliament, a serious blow to professional dignity and prestige.

A great deal of work and care is given by the R.C.V.S. to protect and further our professional interests, much of it unknown to most of us. This week, on the contrary, it has received full mention in the Press, and similarly I feel that we should publicly acknowledge our thanks.,

Yours faithfully,

W. R. McKINNA

20 Ramsden Street,
HUDDERSFIELD.

March 10th, 1956.

The Officers of the B.V.A. also had this matter under close attention, and had taken steps to put forward the strongest additional opposition to this Bill in the House of Commons, had such a course become necessary.

EDITOR.

COMING EVENTS

March

21st (Wed.) Laboratory Meeting of the Section of Comparative Medicine, R.S.M., in the National Institute for Medical Research, The Ridgeway, Mill Hill, N.W.7.
Ordinary General Meeting of the Sussex Division, B.V.A. in the Old Ship Hotel, Brighton, 2.30 p.m.
22nd (Thurs.) Spring Meeting of the North of Scotland Division, B.V.A. at the Northern Hotel, Aberdeen, 2.30 p.m.
72nd A.G.M. of the Western Counties Division, B.V.A. at the Rougemont Hotel, Exeter, 2.15 p.m.
27th (Tues) General Meeting of the Society of Practising Veterinary Surgeons, B.V.A. at the Department of Veterinary Surgery, Langford 2.15 p.m.
29th (Thurs.) Meeting of the Essex Division, B.V.A. in the Department of Veterinary Clinical Studies, Cambridge, 2.30 p.m.

April

4th 5th & 6th. B.V.A. Council and Committee Meetings at the Royal (Dick) School of Veterinary Studies, Edinburgh.
6th (Fri.) Meeting of the North Wales Division, B.V.A. Ruthin, 2.0 p.m
7th (Sat.) 10th Annual Dinner of the B.R.X. Club at the Royal Veterinary College, 6 p.m.
11th & 12th. L.A.B. Congress at the Royal Veterinary College, Camden Town, London, N.W.1.
13th (Fri.) Symposium on "Infections in Laboratory Animals" by the Laboratory Animals Bureau at the Royal Veterinary College, Camden Town, London, N.W.1.
20th (Fri.) Meeting of the Mid-West Division, B.V.A.
26th (Thurs.) Meeting of the Essex Division, B.V.A. in the Essex Institute of Agriculture, Writtle, Essex, 7.30 p.m.

May

4th (Fri.) Annual Ball of the Royal Veterinary College Students' Union Society at the Criterion Restaurant, 9 p.m. Tickets: £3.3.0d. each from the Social Secretary.
10th (Tues.) General Meeting of the Society of Women Veterinary Surgeons in the Veterinary School of the University of Cambridge, 11.30 a.m.
16th (Wed.) A.G.M. of the Scottish Regional Group of the A.V.T. & R.W's in the University of Glasgow Veterinary Hospital, Bearsden Road, Bearsden, 2.15 p.m.

PERSONAL

Birth

SHARRATT.- On March 5th, 1956, to Elspeth, wife of R.K. Sharratt, B.Sc, M.R.C.V.S., of 31 Cranmere Rd., Plymouth, a son.

APPOINTMENTS VACANT

ROYAL VETERINARY COLLEGE (University of London). Applications are invited from veterinary surgeons for the post of Assistant Lecturer in Veterinary Hygiene. Salary scale: £600 x £50 to £700. Commencing salary within the scale according to qualifications and experience. Superannuation benefits and children's allowances. Application forms, obtainable from the Secretary, should be returned to him not later than 31st March, 1956, at the Royal Veterinary College, Royal College Street, N.W.1.

Assistant required in small-animal practice near London. Self-contained flat available.- Matthews, 56, Pembroke Road, Ruislip, Middlesex.

Male or female assistant of experience wanted for small-animal side of general practice in East Anglia. Send full particulars.- Box 220.

Locum wanted for small-animal practice May to June.- Box 221.

Experienced assistant wanted in general practice, mainly agricultural, good prospects for suitable man. Write fully.- Box 222.

Single male assistant required in mixed practice, Herefordshire. Interview expenses paid.- John N. Peatt, Leominster 2236.

Single assistant required in a mixed practice in the East Midlands. Recent graduate would suit. Regular leisure with use of car. Minimum salary £730 with regular increases.- Box 229.

Married assistant, with at least two years' experience, required in good class agricultural practice, Wiltshire. Unfurnished accommodation available. Salary £700 - £1,000 according to experience. Permanency for right man.- Box 237.

Married assistant required for mixed agricultural practice in North-West. Eligible L.V.I. Salary according to experience with free flat and use of car.- Box 239.

Experienced male assistant required beginning May for chiefly agricultural practice. Eligible L.V.I. Good flat and car provided. Starting salary according to experience.- Cubby & Clark, Dalston, Cumberland. Tel: Dalston 208

Assistant required for agricultural practice. House available. Commencing salary £1,000 per annum.- Box 242.

Single assistant required in agricultural practice, South-West. Experience essential. Good salary and prospects.- Box 251.

Experienced assistant required in agricultural practice, mid-Devon. Commencing salary £875. Regular leisure.- Box 252.

Capable and experienced assistant required in mixed practice in Northern Ireland. Salary £700 or upwards according to experience. Reply stating experience to Box 256.

Locum required, 5th-18th May, for one man chiefly small-animal practice, North London. Live in, suitable for member and wife. Own car.- Box 257.

Assistant required, either sex, for mixed practice. Regular leisure, use of car. Salary £728 per annum. Live out. Recent graduate might suit. Interview expenses paid.- Chester, 22, Farley Road, Malvern Link, Worcs. Tel: Malvern 222.

NEWS AND COMMENT

Siege Economy.

Our readers will observe that this week for the first time since the printing dispute began, we are unable to include any typeset reading matter. Hitherto we had been relying upon material prepared in advance; but this, except for enough to provide an issue when the difficulties are resolved, has now all been absorbed and we are reduced to the duplicating machine only. It may be hoped that the end of the trouble is not far distant. The industrial court have made proposals which should, given a measure of goodwill and commonsense, provide the basis for settlement; and though nothing tangible is in sight at the time of writing, we hope not to have to ask readers to accept many more of these homespun editions.

May we explain to those who send classified advertisements that an arbitrary allocation of space between these and other duplicated matter is forced upon us, and for that reason, much as we regret it, classified advertisements cannot be guaranteed to appear in the current issue. Every endeavour will be made to accommodate those which are received by Monday first post at latest.

Among the editorial clouds there is, however, the hint of a silver lining. From time to time some readers complain of the number and complexity of graphs and tables with which our columns are informed. Such readers regard graphs and tables as mere trifles and garnishings, as a kind of superfluous (and indigestible) icing, as it were, upon the scientific cake. Let them be of good heart. Recalcitrant trade unions have done what criticism failed to do; they have banished the graph and the table from these pages - temporarily!

Legal Note

A case of interest to veterinary surgeons who may be called upon to examine horses for soundness before sale was heard recently in the Queen's Bench Division. Mrs. Diana Fitzroy, a well-known breeder of horses, had sold a six-year-old bay gelding to Mr. van Raalte for £700. After the purchase the horse was found to have an osteoarthritic condition of the spine. Being put up again for sale the horse realised only 72 guineas, and Mr. van Raalte took an action for breach of warranty on the plea that the breeder had sold the horse as sound.

It transpired in evidence that the defendant had had every opportunity of trying the horse before purchase and had declared himself satisfied. A veterinary surgeon, having made an examination, had said, "I think he is as sound a horse as I shall examine this year". The judge held that as the animal had been professionally examined the breeder's assertion that the horse was sound - coming from a layman - was made in good faith but did not constitute a warranty in the legal sense. The action for damages was dismissed.

In view of the fact that it was upon further veterinary examination that the disability was discovered, the heavy responsibility resting upon members of the profession in such cases needs no emphasis.

Conference on Feeding Supplements

A conference having the title "Supplements & Additives in Animal Feeding-stuffs" is to be organised by the B.V.A. and will be held in London on November 22nd and 23rd. All members of the profession will be invited to attend, and there will be, also, representatives from interested outside bodies. Preliminary details of the programme will be published in due course.

Animal Health Trust Research Awards

Wellcome Veterinary Research Fellowships

Applications are invited for the appointment of one or more Animal Health Trust Wellcome Fellows, for whole-time research in connection with veterinary science or medicine. Applicants must be under 36 years of age on 1st October 1956 and hold the M.R.C.V.S. diploma or a degree in any faculty relevant to veterinary science or medicine in any university in the British Commonwealth. Applicants are expected to have done some post-graduate work.

Fellowships may be awarded at an annual value of £850 rising by annual increments of £50. The Fellowship is subject to income tax and carries benefits under the F.S.S.U. It is tenable for one year in the first instance and by annual reappointment for a further period of two years at the discretion of the Advisory Committee. Election will be made in June, to take effect as from 1st October 1956. The closing date for applications is Monday, May 14th. Forms are obtainable from:- The Scientific Director, The Animal Health Trust, 14 Ashley Place, Westminster, London, S.W.1.

Research Training Scholarships

These Scholarships, to the value of £400 p.a. (exempt from income tax) are available to recently qualified veterinary surgeons and final year students (subject to July examination results) who wish to undertake further specialist study or supervised research. The value of the scholarship may be increased up to a maximum of £500 p.a. for married applicants. In addition, a sum not exceeding £60 p.a. may be given towards the payment of essential fees.

The awards will be made in June. Forms of application may be obtained from The Scientific Director of The Trust, London, S.W.1. The closing date for the receipt of applications is Monday, 14th May, 1956.

The Central Veterinary Society

The Society's annual all-day meeting will be held on April 5th at the Royal Veterinary College. The subject is "Anaesthesia". The programme commences at 10.30 a.m. and includes the following papers: "Anaesthesia for the poor-risk small animal patient"; "A practitioner's view of current anaesthetic methods"; "The physiological basis of some modern techniques in anaesthesia"; "Hypothermia and cardiac surgery in the dog"; and "Epidural anaesthesia in the dog". At the luncheon, the Society's Victory Medals will be presented to Mr. Charles Roberts of Tunbridge Wells and to Major R.F. Wall of Windsor.

Those who are not Fellows of the Central, and who intend to be present at the luncheon (and/or tea) are asked to notify the Assistant Bursar, Royal Veterinary College, Camden Town, as soon as possible.

The Chiron Club

We are asked again to mention that the annual dinner and dance of the Chiron Club will be held in the Royal Hotel, Bristol, on May 4th at 7 p.m. for 7.30. Dancing will continue until 1 a.m. Tickets (£1 single) are available from Mr. R. R. Ashdown, Department of Veterinary Anatomy, Bristol University.

The Association of Veterinary Teachers & Research Workers

The 10th Annual General Meeting of the Association will be held in the Lecture Theatre, New Arts Building, Liverpool University, on 10th April at 10 a.m. The main business of the meeting will be to receive the reports of the secretary and the treasurer, and to elect officers and ordinary members. Future programmes will then be discussed.

The 17th Ordinary General Meeting, a joint meeting with the Northern Region will follow the A.G.M. The main item on the agenda will comprise a symposium on the scientific and administrative principles underlying the state control of infectious animal disease in Denmark, America, and British Commonwealth countries in the tropics. The speakers will be: Dr. F. Wøldike Nielson, Director of Veterinary Services, Denmark; Captain R. L. Hanson, U.S.A.F. (V.C.) and Mr. M. Crawford, Director of the Commonwealth Bureau of Animal Health. Meals and accommodation will be reserved if the Secretary is notified by the 4th April at latest.

R.C.V.S. Annual Banquet

The Minister of Agriculture, the Rt.Hon. D. Heathcoat-Amory, M.P. will be the guest of honour at the R.C.V.S. annual banquet on April 12th, and will propose the toast of the Royal College.

COMING EVENTS

March

27th (Tues) General Meeting of the Society of Practising Veterinary Surgeons, B.V.A. at the Dept. Veterinary Surgery, Langford, 2.15
29th (Thurs) Meeting of the Essex Division, B.V.A. in the Department of Veterinary Clinical Studies, Cambridge, 2.30 p.m.

April

4th, 5th & 6th B.V.A. Council and Committee Meetings at the Royal (Dick) School of Veterinary Studies, Edinburgh.
6th (Fri) Meeting of the North Wales Division, B.V.A. Ruthin, 2.0
7th (Sat) 10th Annual Dinner of the B.R.X. Club at the Royal Veterinary College, 6 p.m.
11th & 12th. L.A.B. Congress at Royal Veterinary College, London.
12th Annual Dinner of R.C.V.S. at Hyde Park Hotel. Tickets two guineas each obtainable from the Registrar.
13th (Fri) Symposium on "Infections in Laboratory Animals" by the Laboratory Animals Bureau at the Royal Veterinary College, London.
20th (Fri) Meeting of the Mid-West Division, B.V.A. at the Berkeley Cafe, Clifton at 2.30 p.m.
26th (Thurs) Meeting of the Essex Division, B.V.A. in the Essex Institute of Agriculture, Writtle, Essex at 7.30 p.m.

Holiday Exchange

Easter.- The 21-year-old daughter of a French veterinary surgeon would like to spend the Easter holidays "au pair" or as a paying guest in or near London. Any reader who may be good enough to help is asked to write to the General Secretary of the B.V.A.

Personal

Births:

FULLER.- On Feb.28th, 1956 to Anne (nee Knowles) wife of A.T. Fuller, 22 London Road, Sittingbourne, a son (John Barry) brother for Caroline.

OATES.- On March 9th at St. Mary's Hospital, W.2. to Mary, wife of W.G.R.Oates, Registrar, R.C.V.S., a daughter, Mary Ann.

REID.- On Feb.4th, 1956 to Beryl, wife of J.H.Reid, M.R.C.V.S., a daughter, Susan Jane.

WEST.- On March 13th, 1956 at Amherst Maternity Hospital, Guernsey, to Mary Bradbury, wife of Richard C.A.West, M.R.C.V.S., a son.

WHITAKER.- On March 3rd, 1956 to Cecilie (née Edmunds) wife of Lloyd Whitaker, M.R.C.V.S., Ermin House, Syde, Cheltenham, a son, David James.